

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-22. (canceled)

23. (currently amended) A method of generating a modulated navigation signal (7) which is intended to be used to position a downlink receiver (6), comprising multiple pseudorandom navigation codes of chip rhythms greater than 0.5 MHz, modulated onto a carrier of frequency f_p greater than 500 MHz, wherein four distinct and independent pseudorandom navigation codes C_1 , C_2 , C_1' , C_2' are modulated onto the carrier according to an 8-PSK modulation of constant amplitude with a modulation frequency f_M such that:

$$8f_c \leq f_M$$

where $f_c = \text{Max}(f_{ci})$, and f_{ci} designates the chip rhythms f_{c1} , f_{c1}' , f_{c2} , f_{c2}' of the navigation codes C_1 , C_2 , C_1' , C_2' , each f_{ci} value being such that $f_M = N_i \cdot f_{ci}$, N_i being an integer greater than or equal to 8, two navigation codes C_1 , C_1' being quadrature modulated at frequency $f_1 = f_p - f_M/8$, and two other navigation codes C_2 , C_2' being quadrature modulated at

frequency $f_2 = fp + fM/8$, and the modulated navigation signal presenting a constant envelope,
wherein one of i) 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan is used, and ii) 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan is used.

24. (previously presented) A method as claimed in claim 23, wherein fM is chosen to be ≤ 400 MHz.

25. (previously presented) A method as claimed in claim 23, for generating a modulated navigation signal (7) on board a space satellite, wherein fM is chosen to be ≤ 200 MHz.

26. (previously presented) A method as claimed in claim 23, wherein 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan is used.

27. (previously presented) A method as claimed in claim 23, wherein 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan is used.

28. (previously presented) A method as claimed in claim 23, wherein 8-PSK modulation of phase states equal to $k \cdot \pi/4$, where k is an integer between 1 and 8, is used.

29. (previously presented) A method as claimed in claim 23, wherein the four codes are modulated according to a truth table which is chosen from the group of truth tables formed from:

TABLE 1

C1(t)	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1	1	1	1	1
C2(t)	-1	-1	-1	-1	1	1	1	1	-1	-1	-1	-1	1	1	1	1	1
C1'(t)	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	1
C2'(t)	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	1
t modulo 8TM																	
[0, TM[	P5	P4	P4	P3	P6	P7	P5	P2	P6	P1	P3	P2	P7	P8	P8	P1	
[TM, 2TM[	P5	P8	P4	P3	P6	P7	P5	P6	P2	P1	P3	P2	P7	P8	P4	P1	
[2TM, 3TM[	P1	P8	P4	P7	P6	P7	P5	P6	P2	P1	P3	P2	P3	P8	P4	P5	
[3TM, 4TM[	P1	P8	P8	P7	P2	P7	P5	P6	P2	P1	P3	P6	P3	P4	P4	P5	
[4TM, 5TM[	P1	P8	P8	P7	P2	P3	P1	P6	P2	P5	P7	P6	P3	P4	P4	P5	
[5TM, 6TM[	P1	P4	P8	P7	P2	P3	P1	P2	P6	P5	P7	P6	P3	P4	P8	P5	
[6TM, 7TM[	P5	P4	P8	P3	P2	P3	P1	P2	P6	P5	P7	P6	P7	P4	P8	P1	
[7TM, 8TM[	P5	P4	P4	P3	P6	P3	P1	P2	P6	P5	P7	P2	P7	P8	P8	P1	

TABLE 2

C1(t)	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1	1	1	1	1
C2(t)	-1	-1	-1	-1	1	1	1	1	-1	-1	-1	-1	1	1	1	1	1
C1'(t)	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	1
C2'(t)	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	1
t modulo 8TM																	
[0, TM[	P1	P8	P4	P7	P6	P7	P5	P6	P2	P1	P3	P2	P3	P8	P4	P5	
[TM, 2TM[	P1	P8	P8	P7	P2	P7	P5	P6	P2	P1	P3	P6	P3	P4	P4	P5	

[2TM, 3TM[	P1	P8	P8	P7	P2	P3	P1	P6	P2	P5	P7	P6	P3	P4	P4	P5
[3TM, 4TM[	P1	P4	P8	P7	P2	P3	P1	P2	P6	P5	P7	P6	P3	P4	P8	P5
[4TM, 5TM[	P5	P4	P8	P3	P2	P3	P1	P2	P6	P5	P7	P6	P7	P4	P8	P1
[5TM, 6TM[	P5	P4	P4	P3	P6	P3	P1	P2	P6	P5	P7	P2	P7	P8	P8	P1
[6TM, 7TM[	P5	P4	P4	P3	P6	P7	P5	P2	P6	P1	P3	P2	P7	P8	P8	P1
[7TM, 8TM[	P5	P8	P4	P3	P6	P7	P5	P6	P2	P1	P3	P2	P7	P8	P4	P1

where P1, P2, P3, P4, P5, P6, P7, P8 are the various contacts and the 8-PSK constellation, and TM = 1/fM, and other truth tables derived from these truth tables TABLE 1 and TABLE 2 by phase rotation by $n\pi/4$, $n \in \{1, 2, 3, 4, 5, 6, 7\}$ and/or reversal of the direction of the path of the constellation.

30. (previously presented) A method as claimed in claim 23, wherein fp is between 1000 MHz and 1700 MHz.

31. (previously presented) A method as claimed in claim 23, wherein fc is of the order of 10 MHz.

32. (previously presented) A method as claimed in claim 23, wherein fM is of the order of 120 MHz.

33. (currently amended) A method as claimed in ~~claim 23~~ of generating a modulated navigation signal (7) which is intended to be used to position a downlink receiver (6), comprising multiple pseudorandom navigation codes of chip rhythms greater than 0.5 MHz, modulated onto a carrier of

frequency f_p greater than 500 MHz, wherein four distinct and independent pseudorandom navigation codes C_1 , C_2 , C_1' , C_2' are modulated onto the carrier according to an 8-PSK modulation of constant amplitude with a modulation frequency f_M such that:

$$8f_c \leq f_M$$

where $f_c = \text{Max}(f_{ci})$, and f_{ci} designates the chip rhythms f_{c1} , f_{c1}' , f_{c2} , f_{c2}' of the navigation codes C_1 , C_2 , C_1' , C_2' , each f_{ci} value being such that $f_M = N_i \cdot f_{ci}$, N_i being an integer greater than or equal to 8, two navigation codes C_1 , C_1' being quadrature modulated at frequency $f_1 = f_p - f_M/8$, and two other navigation codes C_2 , C_2' being quadrature modulated at frequency $f_2 = f_p + f_M/8$, and the modulated navigation signal presenting a constant envelope, wherein in at least one pair of codes C_1 , C_1' ; C_2 , C_2' which are quadrature modulated onto the same frequency, one of said codes C_1' ; C_2' incorporates digital data which is modulated according to a frequency less than $f_c/1000$.

34. (currently amended) A device for generating a modulated navigation signal which is intended to be used to position a downlink receiver, comprising multiple pseudorandom navigation codes of chip rhythms greater than 0,5 MHz,

modulated onto a carrier of frequency f_p greater than 500 MHz,
this device comprising:

- a circuit to generate pseudorandom navigation codes,
- a phase-shifting modulator circuit which supplies the modulated navigation signal on the carrier,
- an emitter circuit, comprising at least one power amplification stage, and suitable for emitting a radio frequency signal corresponding to the modulated navigation signal,

wherein the modulator circuit is suitable for modulating, on the carrier, four distinct and independent pseudorandom navigation codes C_1 , C_2 , C_1' , C_2' of which the frequencies are an integer multiple of one of them f_c , according to an 8-PSK modulation of constant amplitude with a modulation frequency f_M such that:

$$8f_c \leq f_M$$

where $f_c = \text{Max}(f_{ci})$, and f_{ci} designates the chip rhythms f_{c1} , f_{c1}' , f_{c2} , f_{c2}' of the navigation codes C_1 , C_2 , C_1' , C_2' , each f_{ci} value being such that $f_M = N_i \cdot f_{ci}$, N_i being an integer

greater than or equal to 8, two navigation codes C_1 , C_1' being quadrature modulated at frequency $f_1 = f_p - f_M/8$, and two other navigation codes C_2 , C_2' being quadrature modulated at frequency $f_2 = f_p + f_M/8$, and the modulated navigation signal presenting a constant envelope,
wherein one of i) wherein the modulator circuit is suitable for implementing 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan and 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan is used,
and ii) the modulator circuit is suitable for implementing 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan and 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan is used.

35. (previously presented) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing an 8-PSK modulation with a modulation frequency $f_M \leq 400$ MHz.

36. (previously presented) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing an 8-PSK modulation with a modulation frequency $f_M \leq 200$ MHz.

37. (currently amended) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan and the 8-PSK modulation of symmetrical constant amplitude in the Fresnel plan is used.

38. (currently amended) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan and the 8-PSK modulation of asymmetrical constant amplitude in the Fresnel plan is used.

39. (previously presented) A device as claimed in claim 34, wherein the modulator circuit is suitable for implementing 8-PSK modulation of phase states equal to $k \cdot \pi/4$, where k is an integer between 1 and 8.

40. (previously presented) A device as claimed in claim 34, wherein the modulator circuit is suitable for modulating the four codes according to a truth table which is chosen from the group of truth tables formed from:

TABLE 1

C1(t)	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1	1	1	1
C2(t)	-1	-1	-1	-1	1	1	1	1	-1	-1	-1	-1	1	1	1	1
C1'(t)	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1
C2'(t)	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1
t modulo 8TM																
[0, TM[	P5	P4	P4	P3	P6	P7	P5	P2	P6	P1	P3	P2	P7	P8	P8	P1
[TM, 2TM[	P5	P8	P4	P3	P6	P7	P5	P6	P2	P1	P3	P2	P7	P8	P4	P1
[2TM, 3TM[	P1	P8	P4	P7	P6	P7	P5	P6	P2	P1	P3	P2	P3	P8	P4	P5
[3TM, 4TM[	P1	P8	P8	P7	P2	P7	P5	P6	P2	P1	P3	P6	P3	P4	P4	P5
[4TM, 5TM[	P1	P8	P8	P7	P2	P3	P1	P6	P2	P5	P7	P6	P3	P4	P4	P5
[5TM, 6TM[	P1	P4	P8	P7	P2	P3	P1	P2	P6	P5	P7	P6	P3	P4	P8	P5
[6TM, 7TM[	P5	P4	P8	P3	P2	P3	P1	P2	P6	P5	P7	P6	P7	P4	P8	P1
[7TM, 8TM[	P5	P4	P4	P3	P6	P3	P1	P2	P6	P5	P7	P2	P7	P8	P8	P1

TABLE 2

C1(t)	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1	1	1	1
C2(t)	-1	-1	-1	-1	1	1	1	1	-1	-1	-1	-1	1	1	1	1
C1'(t)	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1	-1	-1	1	1
C2'(t)	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1
t modulo 8TM																
[0, TM[	P1	P8	P4	P7	P6	P7	P5	P6	P2	P1	P3	P2	P3	P8	P4	P5
[TM, 2TM[	P1	P8	P8	P7	P2	P7	P5	P6	P2	P1	P3	P6	P3	P4	P4	P5
[2TM, 3TM[	P1	P8	P8	P7	P2	P3	P1	P6	P2	P5	P7	P6	P3	P4	P4	P5
[3TM, 4TM[	P1	P4	P8	P7	P2	P3	P1	P2	P6	P5	P7	P6	P3	P4	P8	P5
[4TM, 5TM[	P5	P4	P8	P3	P2	P3	P1	P2	P6	P5	P7	P6	P7	P4	P8	P1
[5TM, 6TM[	P5	P4	P4	P3	P6	P3	P1	P2	P6	P5	P7	P2	P7	P8	P8	P1
[6TM, 7TM[	P5	P4	P4	P3	P6	P7	P5	P2	P6	P1	P3	P2	P7	P8	P8	P1
[7TM, 8TM[	P5	P8	P4	P3	P6	P7	P5	P6	P2	P1	P3	P2	P7	P8	P4	P1

where P1, P2, P3, P4, P5, P6, P7, P8 are the various contacts and the 8-PSK constellation, and $TM = 1/fM$, and other truth tables derived from these truth tables TABLE 1 and TABLE 2 by phase rotation by $n.\pi/4$, $n \in \{1, 2, 3, 4, 5, 6, 7\}$ and/or reversal of the direction of the path of the constellation.

41. (previously presented) A device as claimed in claim 34, wherein fp is between 1000 MHz and 1700 MHz.

42. (previously presented) A device as claimed in claim 34, wherein fc is of the order of 10 MHz.

43. (previously presented) A device as claimed in claim 34, wherein fM is of the order of 120 MHz.

44. (previously presented) A device as claimed in claim 34, which is adapted so that in at least one pair of codes which are quadrature modulated onto the same frequency, one of said codes $C1'$, $C2'$ incorporates digital data which is modulated according to a frequency less than $fc/1000$.